

Claims

1. A pressure bonding machine for pressing pressure bonding surfaces of pressure bonding tools onto works to thereby perform a pressure bonding operation,
5 comprising:

a plurality of elevating portions which are mounted with said pressure bonding tools and which ascends and descends independently of one another;

a plurality of pressure generating means disposed individually for said elevating portions and for applying downward pressure to said pressure bonding tools through said
10 elevating portions;

a single descending limit position regulating member for regulating descending limit positions of said plurality of elevating portions; and

an elevating means for elevating said descending limit position regulating member so as to allow said elevating portions to ascend/descend and bring said pressure bonding
15 surfaces of said pressure bonding tools into contact with said works;

wherein height positions of said pressure bonding surfaces of said pressure bonding tools are made different from one another in a state where said descending limit positions of said plurality of elevating portions are regulated by said descending limit position regulating member.
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2. A pressure bonding machine according to Claim 1, wherein said elevating means controls a height position of said descending limit position regulating member.

25 3. A pressure bonding machine according to Claim 1, wherein said pressure generating means are air cylinders having elevating piston rods, and said piston rods form parts of said elevating portions respectively.

30 4. A pressure bonding machine according to Claim 3, wherein said pressure bonding tools are mounted on lower end portions of said piston rods respectively, and said descending limit position regulating member is engaged with upper end portions of said piston rods.

5. A pressure bonding machine according to Claim 1, wherein when a descending operation is further continued by said elevating means after one of said pressure bonding tools abuts against corresponding one of said works so that said pressure bonding tool cannot descend, engagement between said elevating portion mounted with said pressure bonding tool and said descending limit position regulating member is released.

6. A pressure bonding machine for performing a pressure bonding operation, said pressure bonding machine pressing pressure bonding surfaces of pressure bonding tools onto electronic components mounted on edge portions of substrates so as to pressure-bond said electronic components to said substrates, comprising:

a first substrate retention portion and a second substrate retention portion for retaining one of said substrates at a higher position than said first substrate retention portion does;

a lower guard member for supporting, from below, an edge portion of a first substrate retained by said first substrate retention portion and an edge portion of a second substrate retained by said second substrate retention portion;

a first elevating portion mounted in its lower end portion with a first pressure bonding tool and disposed above said lower guard member;

a second elevating portion mounted in its lower end portion with a second pressure bonding tool and disposed above said lower guard member and alongside of said first elevating portion;

a substrate positioning mechanism for horizontally moving said substrate retention portions so that said edge portion of said first substrate retained by said first substrate retention portion is positioned between said substrate lower guard member and said first pressure bonding tool and said edge portion of said second substrate retained by said second substrate retention portion is positioned between said substrate lower guard member and said second pressure bonding tool;

a substrate elevating mechanism for elevating said substrate retention portions individually so that said edge portion of said first substrate retained by said first substrate retention portion and said edge portion of said second substrate retained by said second

substrate retention portion are supported by said substrate lower guard member;

a substrate recognizing means for detecting a position of said first substrate retained by said first substrate retention portion and a position of said second substrate retained by said second substrate retention portion;

5 a positioning control means for controlling said substrate positioning mechanism based on a position detection result of said substrate recognizing means;

a plurality of pressure generating means disposed individually in said first elevating portion and said second elevating portion so as to apply downward forces to said elevating portions respectively;

10 a descending limit position regulating member for regulating a lower limit position of said first elevating portion so as to regulate height of said pressure bonding surface of said first pressure bonding tool and regulating a lower limit position of said second elevating portion so as to regulate height of said pressure bonding surface of said second pressure bonding tool to thereby keep said pressure bonding surface of said second pressure bonding tool at a higher position than said first pressure bonding surface; and

15 an elevating means for changing height of said lower limit position regulating member so as to bring said pressure bonding surface of said first pressure bonding tool into contact with an electronic component on said first substrate supported by said lower guard member and apply thereto a force from corresponding one of said pressure generating means, and so as to bring said pressure bonding surface of said second pressure bonding tool into contact with an electronic component on said second substrate supported by said lower guard member and apply thereto a force from corresponding one of said pressure generating means.

25 7. A pressure bonding machine according to Claim 6, wherein said substrates are display panels, and said electronic components are drivers for driving said display panels.

30 8. A pressure bonding machine according to Claim 6, wherein said substrates are display panels, and said electronic components are connectors for connecting said display panels to other circuit modules.